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IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

TYANNA CANNATA, <i>et al.</i> ,)	No. 06 C 2196
)	
)	
Plaintiffs,)	
)	
)	The Honorable William J. Hibbler
)	
v.)	
)	
FOREST PRESERVE DISTRICT OF)	
DUPAGE COUNTY, <i>et al.</i> ,)	
)	
)	
Defendants.)	

MEMORANDUM OPINION AND ORDER

The Plaintiffs—residents of Wayne Township—sued the Forest Preserve District of DuPage County and BFI Waste Systems of North America, Inc. alleging the defendants mishandled the storage and disposal of toxic waste from the Mallard Landfill. The plaintiffs assert claims under the Comprehensive Environmental Response Compensation and Liability Act ("CERCLA") 42 U.S.C. § 9601 et seq., the Resource Conservation and Recovery Act ("RCRA") 42 U.S.C. § 6901 et seq., and state claims including negligence, private nuisance, willful and wanton misconduct and trespass. The defendants have moved to bar testimony from the plaintiffs' expert. For the reasons set forth below, the defendants' motion is DENIED.

I. Factual Background

The Mallard Landfill is located near Hanover Park, Illinois, and contains approximately 230 to 250 acres of waste. BFI operates the Landfill, and the Forest Preserve District of DuPage County owns the property on which the Landfill sits. In 2006, the DuPage County Health Department tested groundwater samples from residential wells in Wayne Township, an unincorporated area of DuPage County. The samples contained dangerous carcinogens, including vinyl chloride, cis-1,2-dichloroethene and trans-1,2 dichloroethene. Subsequently, a group of Wayne Township residents sued BFI and the Forest Preserve District alleging the defendants' mismanagement of waste from the Landfill caused the contamination of the surrounding area. On October 11, 2006, the Court granted class certification for all individuals who live or own property on seven streets in Wayne Township. In support of their claims, the plaintiff designated Dr. Neil D. Williams as their expert witness on groundwater flow and the source of the contamination. The defendants have moved to bar the testimony of Dr. Williams.

II. Standard of Review

The admission of expert testimony is governed by Federal Rule of Evidence of 702:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

Fed. R. Evid. 702. The role of the district court is to ensure admitted scientific testimony is both relevant and reliable. *Smith v. Ford Motor Co.*, 215, F.3d 713, 718 (7th Cir. 2000). The Supreme Court identified four factors to consider when determining the

reliability of expert testimony: (1) whether the theory or technique has been tested; (2) whether the theory or technique has been subjected to peer review; (3) the known or potential error rate of the method; and (4) the general acceptance of the theory or technique within the scientific community. *Daubert v. Merrill Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 593-594 (1997). The inquiry under Rule 702, however, is flexible and no single *Daubert* factor is dispositive. *Smith*, 215 at 719.

III. Analysis

The defendants assert Williams's testimony regarding: (1) the direction of the groundwater flow; (2) groundwater travel time; and (3) the source of the contamination, should be barred because Williams used faulty methods to interpret the data. The defendants' arguments are without merit.

A. Groundwater Flow

On February 22, 2007, Williams submitted an expert report concluding the Mallard Landfill was the source of the contamination detected in Wayne Township. (Williams Expert Report at 43.) Williams's conclusion was based on his finding that waste from the Landfill migrated through the soil and into the class area. The litigants acknowledge that groundwater travels from areas of higher elevation to areas of lower elevation and that potentiometric surface maps are useful in determining the direction of groundwater flow. Potentiometric maps are created by gathering groundwater elevation data and plotting contour lines that graphically portray the influences acting on groundwater flow. Williams's expert report contends the contamination flowed southwest from the Landfill and into the class area. The defendants object to Williams's

analysis of the potentiometric surface maps and argue the contours of the underground aquifers would cause the contamination to travel in a different direction:

Groundwater flow is perpendicular to groundwater level contours and thus, properly constructed groundwater flow lines must be perpendicular to the potentiometric contour lines. Williams did not follow this method. Many of his flow lines do not intersect the contour lines at right angles, and in nearly every instance, they are angled toward the class area.

(Def. Addendum to Exclude Williams's Testimony at 2.) The defendants argue Williams "curved his contour lines" to reach the result sought by his employer, *i.e.*, showing contaminated water flowing from the Landfill into the class area.

Williams hold a PhD in Geotechnical Engineering from the University of California at Berkeley and has decades of experience dealing with landfills and groundwater pollution. Williams has also taught courses in geotechnical engineering at the Georgia Institute of Technology regarding groundwater flow and contaminant transport. Moreover, Williams was previously hired as an expert witness on *behalf of defendant BFI* regarding the migration of contaminants through landfill lining systems. The defendants acknowledge Williams used the appropriate medium—potentiometric maps—for estimating the direction of groundwater flow. Additionally, the defendants acknowledge plotting contour lines is the appropriate method for tracking groundwater flow. The defendants cite a hydrogeology textbook written by Allan Freeze to argue Williams's flow lines should not be curved or angled to the southwest. (Def. Reply Mem. in Support of Motion to Exclude at 5.). Yet, the textbook also states "sketching of flow nets is something of an art." (Def. Ex. S, R. Allen Freeze, et. al., *Groundwater*, at 171 (1979)). Williams contends the groundwater flows at an angle to the southwest; the

defendants argue the groundwater flows directly to the south. Thus, it appears the defendants' main problem is they disagree with the *result* reached by Williams.

The Supreme Court has directed courts evaluating expert testimony to focus "solely on principles and methodology, *not on the conclusions that they generate.*" *Daubert*, 509 U.S. at 595 (emphasis added). Along these same lines, the Seventh Circuit cautioned "it is not the trial court's role to decide whether an expert's opinion is correct." *Smith*, 215 F.3d at 719. The fact that defendants' experts do not agree with Williams's conclusion regarding the direction of the groundwater flow is no reason to exclude Williams's testimony. *Cf.* Fed. R. Evid. 702 Advisory Committee Notes, 2000 Amendments (explaining "experts sometimes reach different conclusions based on competing version of the facts" and the Rule "is not intended to authorize a trial court to exclude an expert's testimony on the ground that the court believes one version of the facts and not the other."). The defendants should have argued Williams reached the wrong conclusion via vigorous cross-examination and through rebuttal experts, not by moving to exclude the testimony under Rule 702.

Next, defendants contend Williams's testimony is unreliable because he failed to test the accuracy of his conclusions. This argument distorts Williams's deposition testimony, as well as the expert report. Williams testified he plotted his flow lines using four potentiometric maps published by the Illinois State Water Survey. Williams relied on maps from 1960, 1966, 1979 and 2003 to estimate groundwater flow pre-dating the opening of the Landfill through the period of the Landfill's operation. Thus, Williams's opinion on the direction of the groundwater flow derived from his interpretation of these maps.

Williams testified he took a number of steps to “truth up” and verify the accuracy of his source materials. In his deposition, Williams stated that if a city pumps water from the ground, the pumping could alter the surface contours of the area. To ensure the maps were as accurate as possible, Williams testified he contacted a firm that supplied him with “information with respect to the pumping wells in that area and to obtain as much information as possible about the quantities pumped and the years that the pumping wells were in operation.” (Williams Dep. at 11-12.) During the deposition, counsel for defendants asked Williams whether he performed any “research or evaluation” on the changes from the “1960 potentiometric surface maps on up to the date of the latest potentiometric maps.” (*Id.* at 9.) Williams’s answer was unequivocal: “Yes, I did, — I did look at the history of the pumping wells in the vicinity of the site and of the Class area, and I looked at some of the data, on which, or most of the data on which the maps were based.” (*Id.*)

Williams’s expert report also states he considered historical admissions by the defendants when he plotted his flow lines. In 1975, engineers acting on behalf of the Mallard Landfill—in connection with a permit application to the Illinois EPA—stated the “general direction [of groundwater flow] *is to the southwest.*” (Pl. Opposition to Motion to Exclude, Exhibit # 10 at ¶ E.) Moreover, a potentiometric map created by defendant BFI in 1992 arguably shows groundwater flowing southwest from the Landfill towards the class area. (Williams Expert Report at 47.) Even the defendants’ expert, Craig Rawlinson, drew flow lines that looked quite similar to those drawn by Williams. *Compare* (Pl. Opposition to Motion to Exclude, at 4.) *with* (Pl. Opposition to Motion to Exclude, at 5.) Rawlinson’s deposition testimony is illuminating:

Q. So what you drew on both Exhibits 12 and 13 were flow lines that showed groundwater flow west of the South Hill, would go south and southwest toward the class area; isn't that true?

A. Yeah. The groundwater flow approximately three-quarters of a mile west of the landfill would flow towards the class area ...

The defendants' assertion that Williams's analysis of the potentiometric maps was arbitrary and results driven rings hollow.¹

B. *Contaminant Travel Time*

Williams's expert report states the detection of contaminants in the class area is consistent with the timing of releases from the Mallard Landfill: "The dumping of the solvents in the Landfill began in 1975...the calculated travel time between ... the Landfill and the Class Area is in the range of 6.3 to 27.4 years." (Williams Expert Report at 47.) Williams used Darcy's Law to estimate the time it would take for groundwater to flow from the Landfill to the class area. Darcy's Law calculates the speed at which liquid travels through porous substances using an equation that takes into account velocity of the groundwater flow, hydraulic conductivity of the soil and the gradient (slope) of the movement. Darcy's equation is expressed as $V = Ki/n$, where "V" is groundwater velocity, "K" is hydraulic conductivity, "i" is hydraulic gradient and "n" is porosity.

The defendants argue Williams's results are unreliable because he entered faulty variables into Darcy's equation. Instead of entering "average" values for porosity and hydraulic conductivity, the defendants contend Williams used "worst case" values for

¹ The defendants also allege Williams's flow lines may be inaccurate because he drew them by hand instead of using a computer. Points like these should be brought up during cross examination as opposed to a motion to exclude. Cf. *Cooper v. Carl A. Nelson & Co.*, 211 F.3d 1008, 1020 (7th Cir. 2000) ("Our case law has recognized that experts in various fields may rely properly on a wide variety of sources and may employ a similarly wide choice of methodologies in developing an expert opinion.").

these variables.² Thus, the defendants assert the groundwater probably flowed into the class area at slower rate than the time estimated by Williams. (Def. Addendum to Exclude Williams's Testimony at 5.). According to the rebuttal report, however, Williams used values derived from actual data that was either measured at the Landfill site or developed by the Illinois State Water Survey. (Williams Expert Report at 20-23.). Moreover, Williams did not use "worst case" numbers for all of his calculations, and in some instances, his conclusions were more conservative than those of defendants' experts. For example, Williams concluded that since 1975, the contaminants could have traveled 2.65 miles to the southern boundary of the class area; the defendants' expert Charles Andrews concluded that since 1976, the contaminants could have traveled 3 miles. (Pl. Opposition to Motion to Exclude, Exhibit # 27 at 10-11.).

Some of the defendants' experts even used the exact same input variables as Williams. For instance, Williams and defendants' expert Blackmar used the same number for hydraulic conductivity. *Compare* (Pl. Opposition to Motion to Exclude, Exhibit # 20 at 23.) *with* (Pl. Opposition to Motion to Exclude, Exhibit # 24 at 92.). Also, Williams and two of defendants' experts used identical values for effective porosity. (Pl. Opposition to Motion to Exclude, Exhibit # 24 at 91-93.). Defendants' contention that using "average" input values is the best way to estimate travel time is an appealing argument. But once again, this is a point best made during cross examination.

The defendants concede Darcy's equation is the correct method for determining groundwater travel time. The defendants concede Williams used this equation to estimate travel time. The purpose of Rule 702 is to shield the jury from confusing junk

² Williams acknowledges for some leakage rates and velocities the "time of travel was calculated for worst case conditions." Williams asserts the USEPA Guidance Manual for hazardous disposal facilities mandates that the calculations be made in this manner. (Pl. Opposition to Motion to Exclude, Exhibit # 24 at 91.).

science and baseless speculation. *Cf. Tuf Racing Products, Inc. v. American Suzuki Motor Corp.*, 223 F.3d 585, 591 (7th Cir. 2000) (“The principle of *Daubert* is merely that if an expert witness is to offer an opinion based on science, it must be real science, not junk science.”). The Rule was not designed to exclude testimony on issues where well-credentialed experts could disagree: “the question of whether [the expert’s theories] are correct given the circumstances of a particular case is a factual one for the jury to determine after opposing counsel has been provided the opportunity to cross-examine ...” *Smith*, 215 F.3d at 719.

C. *Potential Sources of Contamination*

Williams’s expert report concluded the Landfill is the primary source of the vinyl chloride and dichloroethene detected in the class area. Williams listed eight attributes which, according to him, indicate the Landfill is the primary source. (Williams Expert Report at 43.) Those eight criteria are: (1) significant quantities of solvents disposed at the source; (2) the source is a uniquely active biological environment that degraded PCE and TCE common solvents into DCE and vinyl chloride; (3) the solvents were dumped at a depth and in a manner where migration through the underground aquifer occurs; (4) the source has high-driving pressures or vertical gradients that cause migration through low permeability soils; (5) the source has the characteristics and chemical concentrations consistent with those detected in the class area; (6) the source is located up gradient from the class area, and there is a consistent pathway for migration to the class area; (7) the source has had, and continues to have, a release of sufficient mass to be consistent with the contamination detected in the class area; and (8) the timing of the detection of vinyl chloride and DCE in the class area is consistent with releases from the Landfill.

(Williams Expert Report at 46-47). Williams concluded the “dry cleaners, gas stations or industrial facilities” in the area were not the source of the contamination because they did not share the eight characteristics he attributed to the Landfill. (Williams Expert Report at 47.)

By contrast, the defendants’ experts concluded there were several potential sources of contamination, including a manufacturing facility, a Goodyear service center and a septic farm. Defendants argue Williams’s testimony should be excluded because he employed an *ad hoc* methodology: “Williams made his eight criteria test up off the top of his head.” (Def. Reply Mem. in Support of Motion to Exclude at 6.). The defendants’ brief goes on to state: “Williams testified that his eight criteria test could not be found in any textbook or guidance document ... and his eight criteria test was based solely on his experience.” (Def. Reply Mem. in Support of Motion to Exclude at 6.). Williams’s deposition testimony is as follows:

Q. Can you describe for me any scientific writing or guidance document from which you obtained that list of nine criteria?

A. The list of nine criteria are standard criteria that are used throughout the profession. I think *they’re discussed in any number of textbooks and guidance documents ...*

Q. But you didn’t find that list sitting in any of those textbooks or guidance documents?

A. It’s a combination of points that were *taken from several textbooks and guidance documents.*

(Williams Dep. At 80, 81.).

A review of Williams’s deposition testimony reveals the defendants grossly mischaracterized the evidence. Specifically, the defendants’ brief states: “*Williams testified that his eight criteria test was based solely on his experience.*” (Def. Reply

Mem. in Support of Motion to Exclude at 6.). In reality, Williams testified he relied on his experience in addition to “several textbooks and guidance documents” and that his evaluative criteria were not—as defendants claim—“made up of off the top of his head.” Here, the defendants’ brief comes perilously close to intentionally misleading the Court. The Court, however, will give defendants the benefit of the doubt because their earlier briefs have been well-written and offered candid assessments of the law and evidence.

Putting aside the mischaracterization of Williams’s testimony, the thrust of the defendants’ claim is that Williams’s examination is unreliable because his eight criteria do not constitute an established “test” for contamination. To be sure, the eight criteria can not be plugged into an equation that yields a quantifiable result. But, this argument misses the mark. Take for example Darcy’s Law. Both sides acknowledge it is the appropriate method for estimating the travel of time of groundwater. Darcy’s equation takes into account variables including hydraulic conductivity, porosity, groundwater velocity and hydraulic gradient. Even if there was no set equation, these factors would still be relevant in determining the travel time of groundwater. Similarly here, the eight factors examined by Williams are relevant to determining the source of the contamination, despite the fact that they are not part of an established equation.

Neither party has pointed to an all-encompassing checklist or test for identifying sources of contamination. Thus, defendants argue Williams’s results are unreliable because he failed to rely on an established test *even though defendants can not name the specific test Williams should have used*. In fact, one the defendants’ experts (Charles Andrews) relied on many of the same factors—albeit with different results—that Williams listed in his report. For example, Andrews examined (1) the concentration of

vinyl chloride and cis-1,2-dichloroethene in the Landfill; (2) whether there were “any organic compounds that could degrade to form cis-1,2-dichloroethene;” (3) whether dissolved chemical compounds in groundwater could have migrated from the Landfill; (4) whether there were volatile organic compounds located down gradient from the Landfill; (5) whether the timing of the detection of vinyl chloride and DCE in the class area is consistent with releases from the Landfill. (Doc# 166, Ex. A.).

The defendants do not contend the eight factors considered by Williams are irrelevant. Rather, it seems their true objection is that Williams reached the “wrong” conclusion. As discussed in the preceding sections, this argument is appropriate for cross examination, not pre-trial briefing. *Traharne v. Wayne/Scott Fetzer Co.*, 156 F. Supp. 2d 697, 706 (N.D. Ill. 2001) (“Once a witness passes the threshold of knowledge, skill, experience, training, or education to qualify as an expert, any shortcomings or deficiencies which he or she possesses are reserved for cross-examination.”). As the Seventh Circuit stated, when “experts [offer] conflicting views to the jury about the laws of science as relevant to causation ... it is within the province of the jury to determine which of two contradictory expert statements is deserving of credit.” *Spesco, Inc. v. Gen. Elec. Co.*, 719 F.2d 233, 237-38 (7th Cir. 1983). It appears this case will be decided by a “battle of the experts.” Accordingly, the Court will not strip the jury of its power to decide which parties’ expert is most credible.

IV. CONCLUSION

For the reasons set forth in the preceding analysis, the defendants’ motion to exclude the testimony of Dr. Neil Williams is DENIED.

IT IS SO ORDERED.

9/23/08
Dated

Wm. J. Hibbler
The Honorable William J. Hibbler
United States District Court